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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,649	10/28/2003	Ronald P. Manginell	7224/99849	7775

20567 7590 04/04/2006

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EXAMINER

NAGPAUL, JYOTI

ART UNIT PAPER NUMBER

1743

DATE MAILED: 04/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/696,649

Applicant(s)

MANGINELL ET AL.

Examiner

Jyoti Nagpaul

Art Unit

1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Amendment filed on January 18, 2006 has been acknowledged. Claims 1-22 are pending.

Response to Amendment

Rejection of Claims 1-22 as being unpatentable over Moyer in view of Manginell has been maintained in light of applicant's arguments.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. **Claims 1-22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Moyer in view of Manginell.

Moyer teaches a cross-flow structure useful for filtering a fluid. The structure comprises a substrate (18) having a suspended membrane (11) formed thereon. The structure further comprises a sorption support structure (12) disposed on a surface of the membrane (11). Moyer further teaches a sorptive material (26) disposed on the sorption support structure (12) to sorb and concentrate at least on chemical species from a sample fluid, with the chemical species being releasable upon heating of the sorptive material. Moyer further teaches, "The surfaces of the porous partition walls 12 that define the open channels 14, as well as any surfaces of the end caps 18 exposed to the first fluid flowing through the open channels 14, are coated with a membrane 26 so as to line the channels 14. In the cross-flow filter 10 the membrane 26 is a porous discriminating layer 28, capable of allowing the exchange of one or more contaminants or constituents between the fluids being handled. The discriminating layer 28 is preferably a sintered alpha-alumina membrane, but can be any conventional layer suitable for filtration, microfiltration, ultrafiltration (for example, for sterilization, for purification of crystals, or the like), reverse osmosis (for example, for the desalination of sea water), or gas separation." (See Col. 8, Lines 47-61) Moyer further teaches, "Classes of materials useful for the discriminating layer 28 include sintered ceramics (of

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which the alpha-alumina membrane is an example), polymeric organic compounds, molecular sieves, gels, and microporous or ultraporous gaseous diffusion barriers. "Molecular sieves" include both the zeolites and the crystalline aluminophosphates derived from mixtures containing an organic amine or a quaternary ammonium salt. "Gels" are simply those gels (such as dextran gels) which are useful in gel filtration. "Polymeric organic compounds" include hydrocarbon, halogenated hydrocarbon, fluorocarbon, and chlorofluorocarbon resins and polymers, such as polytetrafluoroethylene (PTFE), tetrafluoroethylene/hexafluoropropylene copolymer (FEP), tetrafluoroethylene/perchloroalkylvinylether copolymer (PFA), polychlorotrifluoroethylene (PCTFE), polyvinylidene fluoride (PVDF), polypropylene resin, and polyvinylchloride resin." (See Col. 8, Lines 62-69 to Col. 9, Lines 1-11) Moyer teaches the filter is preferably constructed of alumina and silica. (See Col. 10, Lines 30-35) The sorption support structure (12) comprises silicon. Moyer teaches, "preferably composed of the same single crystal acicular mullite as the partition walls 12." (See Col. 7, Lines 61-63) The sorption support structure (12) comprises of concentric hollow cylinders, fins, posts and honeycomb structure. (See Figures 1,2 and 3) The suspended membrane (11) is selected from the group consisting of semiconductors and dielectrics. The suspended membrane (11) comprises silicon nitride and a material selected from the group consisting of silicon, suspended membrane comprises a material selected from the group consisting of silicon, polycrystalline silicon, silicon nitride, silicon oxide, silicon oxynitride and silicon carbide and a polymer layer. Moyer teaches, "the mixture of alumina, filler and either silica or clay is formed into any

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convenient or desired shape for the body 11. For example, a first portion of the mixture can be extruded in a honeycomb shape to yield the honeycomb extrusion 13. The remainder of the mixture can then be used to form the end caps 18 or any other pieces as may be included in the body 11." (See Col. 10, Lines 57-64) (See Col. 10, Lines 45-54) Moyer teaches, "The cross-flow filter 10 is preferably constructed as follows: a mixture containing alumina (Al.sub.2 O.sub.3); and silica (SiO.sub.2); in a molar ratio of about 2 to 1 (an atomic ratio of aluminum to silicon of about 4 to 1) is first prepared. The mixture can be prepared by combining clay and alumina, having a net composition of about 76 percent by weight alumina and 24 percent by weight silica, the clay and alumina being mixed according to the amount of alumina and silica in the clay. All of the following percentages, unless indicated otherwise, are also by weight. Suitable clays will typically contain about 35 percent silica and about 50 percent alumina, so that a typical starting composition prepared from alumina and clay can include about 60 percent clay and about 40 percent alumina. However, the mixture is advantageously and preferably prepared directly from alumina and fused (amorphous) silica powders of high purity. The mixture of alumina and clay or silica may be blended with a conventional filler for ceramics, such as wood flour or saw dust, and a convenient amount of water for handling. The filler provides porosity to the mixture upon conversion to acicular mullite, for example, by combustion of an organic filler, or by evolution of water from a hydrated form of alumina or silica. The non-stoichiometric mullite will retain its overall dimensions and its theoretical density upon conversion to its acicular form." (See Col. 10, Lines 30-57) Moyer further teaches the sorptive material

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(28) comprises porous silicon, sol-gel oxide and polymer. (See Col. 9, Lines 13-23)

Moyer further teach at least one hole formed in the suspended membrane (11) for flow of the sample fluid therethrough. (See Col. 10, Lines 9-14)

Moyer fails to explicitly teach a resistive heating element comprising of a metal and doped semiconductor material.

Manginell teaches a chemical preconcentrator with application to chemical sensing and analysis. Manginell teaches the preconcentrator can be formed by depositing a resistive heating element (16) over a membrane and upon heating the sorptive material with the heating resistive heating element.

It would have been obvious to one of the ordinary skill in the art to modify the system of Moyer such that at least one resistive heating element is disposed on the surface of the membrane as exactly taught by Manginell in order to achieve optimal filtration conditions of the filter.

Response to Arguments

Applicant's arguments filed on January 18, 2006 have been fully considered but they are not persuasive. Applicants argue that Moyer does not teach a sorptive material disposed on a sorptive support structure to sorb and concentrate a chemical species of interest from a sample fluid. Moyer does in fact teach this limitation as recited in Claim 1. Please refer in the above rejection.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jyoti Nagpaul whose telephone number is 571-272-1273. The examiner can normally be reached on Monday thru Friday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JN


Jill Warden
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Technology Center 1700